IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE APPLICATION OF:	ANGEL ET AL.	DOCKET NO.:	PF++51162
SERIAL NO.	09/767,821	CONFIRMATION NO.:	2188
FILED:	JANUARY 24, 2001	GROUP ART UNIT:	1617
		EXAMINER:	S. KANTAMNENI

FOR: PROCESS FOR PREPARING WATER-SOLUBLE OR WATER-DISPERSIBLE POLYETHER-CONTAINING POLYMERS AND THE USE THEREOF AS COATING AGENTS, BINDERS AND/OR FILM-FORMING EXCIPIENTS IN PHARMACEUTICAL DOSAGE FORMS OR PACKAGING MATERIALS OR AS ADDITIVES IN COSMETIC, DERMATOLOGICAL OR HYGIENIC PREPARATIONS

TO: HON. COMMISSIONER OF PATENTS AND TRADEMARKS

Sir:

1. ☐ NOTICE OF APPEAL: Applicant hereby appeals to the Board of Appeals from the decision dated -/-, of the Primary Examiner finally rejecting Claims -/-.
2. ☒ BRIEF ON APPEAL in this application is transmitted herewith.
   ☐ Applicants hereby request an Oral Hearing.
3. ☒ Applicants hereby request entry of their timely reply dated *July 06, 2006,* for purposes of appeal.
4. ☒ Applicants hereby petition for a -3- month extension of time under 37 C.F.R. §1.136(a).
   ☐ A petition for a -/- month extension of time including the requisite fee of -/- has been submitted along with the reply under 37 C.F.R. §1.116 dated -/-.
5. ☒ The following fee(s) in the total amount of **-$1,520.00-** is(are) paid herewith by credit card (Form PTO-2038 enclosed):
   ☒ The *$ 500.00* fee required under 37 C.F.R. §41.20(b)(2).
   ☐ The *$1000.00* fee required under 37 C.F.R. §41.20(b)(3).
   ☒ The *$1020.00* fee required under 37 C.F.R. §1.17(a).
   ☐ A fee is not required (Fee paid in prior appeal).
6. ☒ The Commissioner is hereby authorized to charge any fee which may be further required, or credit any over payment, to Deposit Account No. 14.1437. A duplicate copy of this sheet is attached.

Respectfully submitted,

NOVAK DRUCE DELUCA & QUIGG

James Remenick
Reg. No. 36,902

Customer No.: 26474
1300 Eye Street, N.W.
Suite 400 East Tower
Washington, D.C. 20005
(202) 659-0100

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Honorable Commissioner
for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Sir:

This is an appeal from the Examiner's final rejection of Claims 1 to 3, 10, and 18 to 21, dated April 06, 2006. Claims 1 to 3, 10, and 18 to 21 are currently pending.

TABLE OF CONTENTS

REAL PARTY IN INTEREST:

The real party in interest is BASF Aktiengesellschaft, 67056 Ludwigshafen, Germany.

RELATED APPEALS AND INTERFERENCES:

To the best of the undersigned's knowledge, there are no related appeals or interferences within the meaning of 37 C.F.R. §41.37(c)(1)(ii).

STATUS OF THE CLAIMS:

Claims 1 to 3, 10, and 18 to 21 are currently pending;

Claims 4 to 9 and 11 to 17 were canceled;

Claims 1 to 3, 10, and 18 to 21 stand rejected;

No Claim(s) stand(s) allowed;

No Claim(s) stand(s) objected to; and

No Claim(s) stand(s) withdrawn from consideration.

A copy of the claims currently pending in the application is provided in the Claims Appendix of this paper.

STATUS OF THE AMENDMENTS:

Claims 1 to 3, 10, and 18 to 21 in the currently pending wording were presented with appellants' paper dated January 11, 2006, in reply to a non-final Office action mailed on August 05, 2005.

No further amendments to the application have been filed in this application subsequent to the final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER:

Claim 1 is the sole independent claim currently pending in the application. According to Claim 1, appellants' invention pertains to a particular process for the preparation of graft copolymers of polyvinyl esters by polymerizing (a) one or more vinyl ester of aliphatic C_1–C_{24}–carboxylic acids[1)] in the presence of (b) certain polyethers of

1) Claim 1; cf. also page 2, indicated lines 8 and 9, and page 11, indicated line 19, to page 13, indicated line 28, of the application.

formula (I)[2] which are solid at room temperature,[3] and optionally (c) at least one other monomer[4] and adding a free-radical initiator system.[5]

More specifically, appellants' process requires that the free-radical initiator system which is added to the polymerization be *"a solution consisting of a free-radical initiator and a liquid polyethylene glycol"* and that the liquid polyethylene glycol of the free radical initiator system have *"a molecular weight between 88 and 1000 which polyethylene glycol is liquid at room temperature."*[6]

Appellants have found that the utilization of the particular initiator system ensures that the grafting reaction can be managed more safely[7] than prior art procedures in which the free radical initiator is combined with the monomers and polyethylene glycol or polyether grafting base before the polymerization or in the feed.[8]

Claims 2, 3, 10 and 18 to 21 depend upon Claim 1 and incorporate the pertinent elements of Claim 1 by reference. The dependent claims will not be discussed separately in this paper, and a summary of the subject matter of the dependent claims is therefore not required.

GROUND(S) OF REJECTION TO BE REVIEWED:

Whether the Examiner erred finding that the subject matter of appellants' Claims 1 to 3, 10, and 18 to 21 was *prima facie* obvious under 35 U.S.C. §103(a) in light of the teaching of ***GB 922,457*** when taken in view of the disclosure of ***Wu et al.*** **(US 5,338,813).**

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2) The definition of formula (I) as set forth in Claim 1 has been omitted since it is of no relevance with regard to the arguments presented in this brief.

3) Claim 1; cf. also page 2, indicated lines 11 and 12, and page 3, indicated line 14, to page 4, indicated line 13, of the application.

4) Claim 1; cf. also page 2, indicated line 14, and page 13, indicated line 30, to page 18, indicated line 2, of the application.

5) Claim 1; cf. also page 2, indicated lines 16 to 18, and page 19, indicated lines 22 to 37, of the application.

6) Claim 1; cf. also page 2, indicated lines 16 to 18, page 2, indicated line 45, to page 3, indicated lines 3, as well as "Feed 2" referenced in connection with Example 1 on page 21, indicated line 40 and 41, of the application.

7) Cf. page 2, indicated lines 45 to 47, of the application.

8) Cf. page 1, indicated lines 39 to 41, of the application.

ARGUMENT(S)

The Examiner's conclusion that the subject matter of appellants' Claims 1 to 3, 10 and 18 to 21 was unpatentable under 35 U.S.C. §103(a) in light of the teaching of **GB 922,457** *when taken in view of the disclosure of* **Wu et al.** *is, for the following reasons, deemed to be in error*.

When applying 35 U.S.C. 103, it is inter alia necessary that the references be considered as a whole, that the references suggest the desirability and thus the obviousness of making the claimed combination, and that the references be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.[9] In determining obviousness the decisionmaker therefore has to return to the time at which the invention was made.[10] Moreover, three basic criteria have to be met in order to establish a *prima facie* case of obviousness:

(1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings,

(2) there must be a reasonable expectation of success, and

(3) the prior art reference or the combined references must teach or suggest all of the claim limitations.

Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and cannot be based on the applicant's disclosure.[11]

A review of the arguments which were made by the Examiner in support of the rejection of appellants' claims reveals that the Examiner failed to view the references without the benefit of impermissible hindsight vision afforded by appellants' invention. The Examiner further failed to show that the references suggest the desirability and thus the obviousness of making the combination of elements which characterizes appellants' invention. The Examiner's conclusion is therefore in error and the rejection should be reversed.

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9) *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

10) E.g. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); *Gilette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720, 16 USPQ2d 1923 (Fed. Cir. 1990).

11) *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

When summarizing the teaching of ***GB 922,457*** the Examiner pointed, inter alia, to certain technical aspects addressed in the reference regarding the graft copolymerization of vinyl esters and polyalkylene glycols using a free-radical initiator which is taught, namely

- that the graft copolymerization was conducted in a homogeneous phase whereby the polyethylene glycol was dissolved in the vinyl ester monomer(s) in the presence or absence of a solvent;[12] and
- that the graft copolymerization was induced by means of a radical forming chain transfer mechanism.[13]

The Examiner noted correctly that the illustrative examples employed a procedure in which a solution of the vinylester, the polyalkylene glycol and the initiator was polymerized and wherein residual portions of the respective solution were subsequently added to the reaction mixture.[14] As such, the procedure described in the British reference entails the hazardous conditions which appellants' invention seeks to avoid.[15]

The Examiner acknowledged this pertinent distinction stating that the reference *"does not specifically teach the addition of free-radical initiator system in solution consisting of a free radical initiator and a liquid polyethylene glycol having a molecular weight between 88 and 1000."*[16]

However, to overcome the deficiency of the British reference the Examiner turned to ***Wu et al.*** for disclosing a polymerization process in which a free-radical initiator was added to a polymerization reaction as a solution consisting of the initiator and a liquid polyethylene glycol having a molecular weight of 300 (*in the following also referred to as* **PEG-300**).[17] The Examiner derived the motivation to employ the measure taken in the polymerization of ***Wu et al.*** in the context of the graft copolymerization addressed in the primary reference from ***Wu et al.***'s disclosure that PEG-300 acted as a chain transfer agent to control the molecular weight and the polydispersity of the polymer obtained in accordance with the secondary reference.[18]

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12) Final action page 3, lines 7 to 10.

13) Final action page 3, lines 18 to 20.

14) Final action page 3, lines 14 to 17.

15) Page 1, indicated line 39, to page 2, indicated line 18, of the application.

16) Final action page 4, lines 1 to 3.

17) Final action page 4, lines 4 to 10.

18) Final action page 4, lines to 18.

The Examiner argued that the addition of ***Wu et al.***'s chain transfer agent was desirable in the graft copolymerization of the British reference in order to achieve a better control of the molecular weight distribution and polydispersity[19] because *"the grafting of the monomers along the polyalkylene glycol chains is induced by means of a radical-forming chain transfer mechanism."*[20]

The rationale underlying the Examiner's reasoning is flawed, and the motivation which is construed by the Examiner does not flow logically from information which is conferred by the references. The Examiner's arguments are therefore clearly guided by knowledge gleaned from applicants' invention rather than the teachings and disclosures of the cited references.

The disclosure of ***Wu et al.*** pertains to the manufacture of polyvinyl pyrrolidone (PVP) homopolymer in aqueous solution and the chain transfer agent of choice is, in this context, polyethylene glycol (PEG) having a molecular weight of about 300.[21] In addition, the reference explains:[22]

> *The molecular weight distribution of high molecular weight polymers can also be controlled in a free radical polymerization at high conversion using chain transfer agents as additives. In such processes, chain transfer can occur in the free radical polymerization between the growing chain and the monomer, polymer and/or solvent. chain [sic] transfer agents have hydrogen atoms or other atoms which are more labile in a free radical polymerization than the hydrogen atoms on the monomer or polymer. The chain transfer agent thus functions by terminating a growing chain by <u>providing a more labile hydrogen atom</u> to the growing chain. This mechanism can be used to control the molecular weight distribution of the polymer obtained.*

These explanations show that, in general, <u>any</u> compound which is capable of providing such a *"more labile hydrogen atom"* to a growing polymer chain functions as a chain transfer agent. Notwithstanding the fact that ***Wu et al.*** employ PEG-300 as chain transfer agent in the manufacture of polyvinyl pyrrolidone (PVP) homopolymer, this also shows that any polyalkylene glycol provides the necessary *"more labile hydrogen atom"* and functions as a chain transfer agent. The

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19) Final action page 2, lines 11 to 22.

20) Page 2, indicated lines 18 to 21, of ***GB 922,457***.

21) Col. 2, indicated lines 25 to 36, of ***US 5,338,814***.

22) Col. 1, indicated lines 34 to 48, of ***US 5,338,814***; emphasis added.

Examiner acknowledged this fact stating: *"Thus, '457 teaches that liquid and solid polyethylene glycol function as a chain transfer agents [sic] because both produce graft copolymers."*[23]

Notably, the graft copolymerization described in ***GB 922,457*** mandates the presence of polyalkylene glycol in the polymerization mixture since the respective compound provides the chain onto which the monomers are to be grafted. As such, the conditions prevalent in the graft copolymerization of the British reference are clearly not comparable with, or equivalent to, the conditions of ***Wu et al.***'s homopolymerization of vinylpyrrolidone. Most pertinently, since the British reference employs polyalkylene glycols as the grafting base, the reaction mixture which is present under the conditions addressed in this reference already contains an abundance of the polyalkylene glycol *"chain transfer agent"* and therefore provides a pool of *"more labile hydrogen atom"* which can be added to growing polymer chain(s). There is, accordingly, no necessity whatsoever to introduce any additional polyethylene glycol to induce the radical forming chain transfer mechanism underlying the graft copolymerization of ***GB 922,457***. Also, the procedural measures which are taken in accordance with the British reference ensure that the polyalkylene glycol *"chain transfer agent"* is continuously provided by adding residual amounts of the mixture of monomers, polyalkylene glycol and initiator over a certain amount of time after the graft copolymerization has been started.[24]

When the references are viewed from the standpoint of a person of ordinary skill in the art who was not imbued with knowledge gleaned from appellants' invention, the combined references clearly cannot suggest the desirability and thus the obviousness of the subject matter of appellants' claims. As shown in the foregoing, a person of ordinary skill in the art who had the references before him could not reasonably expect to achieve any particular result by introducing the polyethylene glycol chain transfer agent of ***Wu et al.*** into the graft copolymerization reaction described in ***GB 922,457***. Contrary to the Examiner's position, the references therefore clearly fail to suggest the desirability and thus the obviousness of making the combination of elements which characterizes appellants' invention.

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23) Advisory action dated August 24, 2006, Continuation Sheet (PTO-303) lines 19 and 20.

24) Cf. the Examiner's summary of Example 2 on page 3, lines 14 to 17, of the final Office action.

The foregoing analysis of the information which was available from the teaching of ***GB 922,457*** and the disclosure of ***Wu et al.*** at the time appellants made their invention also shows why basic criteria for establishing a *prima facie* case of obviousness are not met. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and cannot based on the applicant's disclosure.[25] *"To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references."*[26]

When these established principles are properly applied it is apparent that the Examiner failed to show that there was some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings:

According to the Examiner, the suggestion or motivation arises from a desire to employ a chain transfer agent in the graft copolymerization of ***GB 922,457***. However, the *"chain transfer agent"* is already present in the graft copolymerization reaction mixture in abundance in form of the polyalkylene glycol which is used as the grafting base. It should also be borne in mind that the species which are involved in the chain transfer occurring in the homopolymerization of vinyl pyrrolidone of ***Wu et al.*** and in the graft copolymerization of ***GB 922,457*** differ materially and the same applies to the conditions under which the respective reactions are conducted: ***Wu et al.***'s homopolymerization takes place in aqueous solution whereas the British reference states: *"To improve the probability of transfer, it is preferred to polymerize in homogenous phase in the absence of additional solvents."*[27]

When the above principles are properly applied it is also evident that the Examiner failed to show that there was a reasonable expectation of success:

According to the Examiner, a person of ordinary skill in the art

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25) *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)

26) *Ex parte Clapp*, 227 USPQ 972, 973 (BPAI 1985).

27) Page 2, indicated lines 21 to 24, of ***GB 922,457***.

would have expected to arrive at a better control of the molecular weight distribution and the polydispersity of the graft copolymer. However, as also noted by the Examiner, *"Thus, '457 teaches that liquid and solid polyethylene glycol function as a chain transfer agents [sic] because both produce graft copolymers."*[28] The chain transfer function in the graft copolymerization of the British reference is, accordingly, provided in either case and it is of no moment whether the polyalkylene grafting base is in liquid or in solid form. Also, ***GB 922,457*** states: *"As polyalkylene glycols there are suitable, for example, polyethylene glycols having a molecular weight of 106 to several millions, preferably in the range from 1,000 to 30,000."*[29] This means that, under the conditions of the graft copolymerization of the British reference, the chain transfer agent of ***Wu et al.*** would reasonably be expected to act as a grafting base, thereby increasing the molecular weight distribution and the polydispersity of the grafted product. The beneficial effect which the PEG-300 chain transfer agent has on the homopolymerization of vinyl pyrrolidone in aqueous solution which is disclosed by ***Wu et al.*** can, therefore, clearly not be expected to arise in the context of the graft copolymerization taught in ***GB 922,457***.

C O N C L U S I O N

In light of the foregoing reasons and explanations as well as the explanations already presented by appellants in their papers dated January 11, 2006, and July 06, 2006,[30] it is respectfully urged that the Examiner's final rejection of Claims 1 to 3, 10 and 18 to 21 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of ***GB 922,457*** when taken in light of the disclosure of ***Wu et al.*** was in error. Appellants therefore respectfully request that the Examiner's rejection be reversed. Favorable action is solicited.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit

28) Advisory action dated August 24, 2006, Continuation Sheet (PTO-303) lines 19 and 20.

29) Page 2, indicated lines 70 to 73, of ***GB 922,457***.

30) The respective papers are herewith incorporated by reference.

Account No. 14.1437. Please credit any excess fees to such deposit account.

Respectfully submitted,
NOVAK DRUCE DELUCA & QUIGG

James Remenick
Reg. No. 36,902

1300 Eye Street, N.W.
Suite 400 East Tower
Washington, D.C. 20005
(202) 659-0100

Encl.: CLAIMS APPENDIX (Appendix I)
EVIDENCE APPENDIX (Appendix II)
RELATED PROCEEDINGS APPENDIX (Appendix III)

JR/BAS

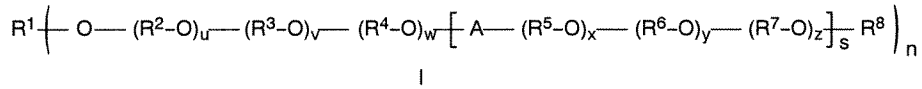
APPENDIX I:

CLAIMS APPENDIX

1. A process for preparing graft copolymers of polyvinyl esters which comprises polymerizing

a) at least one vinyl ester of aliphatic C_1–C_{24}–carboxylic acids in the presence of

b) polyethers which are solid at room temperature and have the general formula I



in which the variables have the following meaning, independently of one another:

R^1 hydrogen, C_1–C_{24}–alkyl, R^9–C(=O)–, R^9–NH–C(=O)–, polyalcohol residue;

R^8 hydrogen, C_1–C_{24}–alkyl, R^9–C(=O)–, R^9–NH–C(=O)–;

R^2 to R^7 $-(CH_2)_2-$, $-(CH_2)_3-$, $-(CH_2)_4-$, $-CH_2-CH(CH_3)-$, $-CH_2-CH(CH_2-CH_3)-$, $-CH_2-CHOR^{10}-CH_2-$;

R^9 C_1–C_{24}–alkyl;

R^{10} hydrogen, C_1–C_{24}–alkyl, R^9–C(=O)–;

A –C(=O)–O-, –C(=O)–B–C(=O)–O-, –C(=O)–NH–B–NH–C(=O)–O-;

B $-(CH_2)_t-$, optionally substituted arylene;

n 1 to 8;

s 0 to 500;

t 1 to 12;

u 1 to 5000;

v 0 to 5000;

w 0 to 5000;

x 1 to 5000;

y 0 to 5000;

z 0 to 5000

c) and optionally at least one other monomer

by adding a free-radical initiator system, wherein the free-radical initiator system is a solution consisting of a free-radical initiator and a liquid polyethylene glycol having a molecular weight between 88 and 1000 which polyethylene glycol is liquid at room temperature.

2. A process as claimed in claim 1, wherein the solution of the free-radical initiator is added continuously throughout the polymerization reaction time.

3. A process as claimed in claim 1, wherein liquid polyethylene glycol is used as solvent for the free-radical initiator at room temperature.

10. The process of claim 1, wherein the molecular weight of the liquid polyethylene glycol is between 100 and 600.

18. A process as claimed in claim 1, wherein the solid polyether (b) has a molecular weight of from 1000 to 500,000.

19. A process as claimed in claim 1, wherein the solid polyether (b) has a molecular weight of from 1000 to 100,000.

20. A process as claimed in claim 1, wherein the solid polyether (b) has a molecular weight of from 1000 to 20,000.

21. A process as claimed in claim 1, wherein the solid polyether (b) has a molecular weight of from 1000 to 15,000.

APPENDIX II:

EVIDENCE APPENDIX

NONE

APPENDIX III:

RELATED PROCEEDINGS APPENDIX

NONE